We claim:-

1. A syntactic polyurethane obtainable by reacting
   a) a polyisocyanate component with
   b) a polyol component, the polyol component b) comprising the constituents
      b1) a polyetherpolyol based on a difunctional initiator molecule,
      b2) a polyetherpolyol based on a trifunctional initiator molecule and
      b3) a chain extender,
   in the presence of
   c) hollow microspheres.

2. A syntactic polyurethane according to claim 1, wherein the polyol constituent b)2 comprises the constituents
   b2-1) a polyetherpolyol based on a trifunctional initiator molecule having an average molecular weight of from 400 to 3500 g/mol and
   b2-2) a polyetherpolyol based on a trifunctional initiator molecule having an average molecular weight of from more than 3500 to 8000 g/mol.

3. A syntactic polyurethane according to claim 1 or 2, wherein the polyol component b) additionally contains a consitutent
   b4) a polyetherpolyol based on an initiator molecule which is tetrafunctional or has a higher functionality.

4. A syntactic polyurethane according to any of claims 1 to 3, wherein the individual constituents of the polyol component b) are selected so that the polyol component b) has a viscosity at 25°C of less than 500 mPa.s, measured according to DIN 53019.

5. A syntactic polyurethane according to any of claims 1 to 4, wherein the component
   b1) is present in an amount of from 20 to 60% by weight, the component
   b2) is present in an amount of from 20 to 60% by weight, and the component
   b3) is present in an amount of from 5 to 25% by weight,
   based on the total weight of the polyol component b).

6. A process for the preparation of syntactic polyurethanes by reacting
   a) a polyisocyanate component with
   b) a polyol component, the polyol component b) comprising the constituents
      b1) a polyetherpolyol based on a difunctional initiator molecule,
      b2) a polyetherpolyol based on a trifunctional initiator molecule and
      b3) a chain extender,
   in the presence of

c) hollow microspheres.

7. The use of a syntactic polyurethane according to any of claims 1 to 5 for insulating offshore pipes.

8. An offshore pipe composed of
(i) an inner pipe and, adhesively applied thereto,
(ii) a layer of a syntactic polyurethane according to any of claims 1 to 5.

9. An offshore pipe according to claim 8, wherein the layer (ii) of syntactic polyurethane has a thickness of from 5 to 200 mm.

10. A process for the production of offshore pipes according to claim 8 or 9, comprising the steps
1) provision of an inner pipe which is to be coated with syntactic polyurethane,
2) rotation of the pipe to be coated and
3) application of an unreacted reaction mixture for the production of the layer of syntactic polyurethane, comprising the components a), b) and c), to the rotating pipe.